

CLAIMS:

1. An integrated protection circuit for an integrated circuit device,
comprising: - a first transistor (MP1) whose control outputs are connected between a
pad (2, 3) and a control input of a clamping device (MN4), - the control outputs of said
clamping device (MN4) being connected between said pad (2, 3) and a reference
5 voltage terminal (4), - a second transistor (MN3) whose control outputs are connected
between the control output of said first transistor (MP1) and said reference voltage
terminal (4), and - time-delay means (R, MN1) connected between a supply voltage
terminal (1) and said control inputs of said first transistor (MP1) and said second
transistor (MN3).
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2. The protection circuit according to claim 1, wherein the pad (2, 3) is a
signal pad (2) or a power supply pad (3).
3. The protection circuit according to claim 1 or 2, wherein the time-delay
15 element (R, MN1) comprises a series connection of a resistor (R) and a capacitance.
4. The protection circuit according to claim 3, wherein the time-delay
element (R, MN1) comprises a third transistor (MN1), the resistor (R) being connected
between the supply voltage terminal (1) and said third transistor (MN1), said third
20 transistor (MN1) forming the capacitance.
5. The protection circuit according to claim 4, wherein a fourth transistor
(MN2) is provided whose control outputs are connected between the reference voltage
terminal (4) and the control output of the third transistor (MN1) and whose control
25 input is connected to said reference voltage terminal (4).

6. The protection circuit according to any preceding claim, wherein the first transistor (MP1) is a p-channel MOS transistor.
- 5 7. The protection circuit according to any preceding claim, wherein the second, third and fourth transistor (MN1, MN2, MN3) are n-channel MOS transistors.
8. The protection circuit according to any preceding claim, wherein the clamping device (MN4) is a n-channel MOS transistor layouted for ESD protection.
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9. The protection circuit according to any of the preceding claims 1 to 7, wherein the clamping device (MN4) is a parasitic npn transistor.
10. The protection circuit according to any of the preceding claims 1 to 7,
- 15 wherein the clamping device (MN4) is a thyristor.
11. The protection circuit according to any preceding claim, wherein a diode (D) is connected between the pad (2) and the supply voltage terminal (1).